

AMENDMENTS TO THE CLAIMS

The claims in this listing will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS

1-2. (Cancelled)

3. (Currently Amended) A method of detecting a collision between two transmissions in a radio frequency network of devices, the method including[[:]]:

transmitting from a first device, a first data frame ~~according to claim 1~~ including data that is coded so as to be perceived by a device receiving the first data frame as a collision when the device is already receiving data from another source;

transmitting from a second device, a second data frame ~~according to the data frame of claim 1~~ including data that is coded so as to be perceived by a device receiving the second data frame as a collision when the device is already receiving data from another source; and

detecting a coded data sequence from the second data frame while receiving the first data frame[[:]] ~~and recognizing;~~

recognizing a the resulting data sequence as indicating a collision; and
transmitting a collision signal that is itself perceived by one or more other devices as a collision.

4. (Currently Amended) A method according to claim 3, ~~wherein~~ further comprising, upon detecting the resulting data sequence, transmitting a collision acknowledge signal to inform the first device that its transmission was interrupted.

5. (Currently Amended) A method according to claim 4, wherein the collision acknowledge signal is transmitted after all the data frames are received.

6. (Cancelled)

7. (Currently Amended) A method according to claim ~~[[6]]~~ 3, wherein the one or more other devices transmit a subsequent collision signal upon receiving the collision signal.

8. (Currently Amended) A radio communication system ~~including at least three devices, in use, comprising:~~

~~the a first device that transmits a first data frame according to claim 1, including data that is coded so as to be perceived by a device receiving the first data frame as a collision when the device is already receiving data from another source;~~

~~a second device transmits that transmits a second data frame according to claim 1 including data that is coded so as to be perceived by a device receiving the second data frame as a collision when the device is already receiving data from another source;~~

and

a third device that receives the first and second data frames, ~~and detects the coded data from the second data frame while receiving the first data frame, and recognises~~
~~recognizes a the~~ resulting data sequence as indicating a collision, and transmits a collision signal to other devices which itself will be perceived by the other devices as a collision.

9. (Currently Amended) A system according to claim 8, wherein upon detecting the resulting sequence, the ~~receiving~~ third device transmits a collision acknowledge after receiving the complete second data frame.

10. (Cancelled)

11. (Currently Amended) A system according to claim ~~[[10]]~~ 8, wherein the other devices, upon receiving the collision signal, each transmit a subsequent collision signal which is perceived by other devices as a collision.

12. (Currently Amended) A transceiver for use in a radio communication system including at least two other transceivers, ~~in use, a first of the other transceivers transmits a first data frame according to claim 1, and the second other transceiver subsequently transmits a second data frame according to claim 1, the transceiver, in use, upon receiving the coded data from the second data frame while receiving the first data frame, recognises the resulting data sequence as indicating a collision~~

wherein the transceiver:

receives, from a first transceiver of the other transceivers, a first data frame including data that is coded so as to be perceived by a device receiving the first data frame as a collision when the device is already receiving data from another source;

receives, from a second transceiver of the other transceivers, a second data frame including data that is coded so as to be perceived by a device receiving the second data frame as a collision when the device is already receiving data from another source;

and upon receiving the coded data from the second data frame while receiving the first data frame, recognizes a resulting data sequence as indicating a collision, and transmits a collision signal which will itself be perceived by the other transceivers as a collision.

13. (Currently Amended) A transceiver according to claim 12, wherein the transceiver ~~will continue~~ continues to receive the first and second data frames until the transceiver detects an end of frame marker in the data frame which finishes last, at which time, the transceiver ~~will transmit~~ transmits a collision acknowledge.

14-20. (Cancelled)

21. (Currently Amended) A radio communication system including a transceiver/transmitter, and at least two transceiver/receivers,

wherein the transceiver/transmitter transmits data in a first time slot to the transceiver/receivers, and

wherein upon receipt of the data, each of the transceiver/receivers is configured to return either a first acknowledgement state in a second time slot, after the first time slot, is configured to return a second acknowledgement state in a third time slot, after the second time slot, ~~or~~ and is configured to return a collision acknowledgement in a fourth time slot.

22. (Currently Amended) A radio communications system according to claim 21, wherein one of the acknowledgement states is a positive acknowledge and the other acknowledgement state is a negative acknowledge.

23. (Currently Amended) A radio communications system according to claim 22, wherein the first acknowledgement state is the positive acknowledge and the second acknowledge state is the negative acknowledge.

24. (Currently Amended) A radio communications system according to claim 21, wherein the first time slot is variable in length and the second and third time slots are fixed in length.

25. (Currently Amended) A radio communications system according to claim 22, wherein upon each transceiver/receiver detecting a correctly coded transmission in the negative acknowledge time slot, each transceiver/receiver discards the data previously received in the first time slot and the transceiver/transmitter re-transmits the data to each of the transceiver/receivers.

26. (Currently Amended) A transceiver/receiver for use in a radio communications system including at least one transceiver/transmitter and at least one other transceiver/receiver, ~~in use,~~

wherein the transceiver/receiver, upon receiving a data packet in a first time slot from said transceiver/transmitter, ~~either transmits~~ is configured to transmit a first acknowledgement state in a second time slot, after the first time slot, ~~transmits~~ is configured to transmit a second acknowledgement state in a third time slot, after the second time slot, ~~or transmits~~ and is configured to transmit a collision acknowledgement state in a fourth time slot, after the third time slot.

27. (Currently Amended) A transceiver/receiver according to claim 26, wherein the transceiver/receiver further receives the first acknowledgement state in the second time slot from the at least one other transceiver/receiver or receives the second acknowledgement state in the third time slot from the at least one other transceiver/receiver.

28. (Currently Amended) A transceiver/receiver according to claim 27, wherein one of the acknowledgement states is a positive acknowledge and the other acknowledgement states is a negative acknowledge.

29. (Currently Amended) A transceiver/receiver according to claim 28, wherein the first acknowledgement state is the positive acknowledge and the second acknowledgement state is the negative acknowledge.

30. (Currently Amended) A transceiver/receiver according to claim 29, wherein upon receiving a negative acknowledge from the at least one other transceiver/receivers, the transceiver/receiver discards the data packet received in the first time slot.

31. (Currently Amended) A transceiver/transmitter for use in a communications system including at least one other transceiver/receiver,

wherein ~~in-use~~, the transceiver/transmitter transmits a data packet in a first time slot to the at least one transceiver/receiver and ~~receives either~~ is configured to receive a first acknowledge state in a second time slot, after the first time slot from one or more of the transceivers/receivers, ~~receives~~ is configured to receive a second acknowledgement state in a third time slot after the second time slot from one or more of the transceiver/receivers, ~~or-receives~~ and is configured to receive a collision acknowledgement state in a fourth time slot after the third time slot, from one or more of the transceiver/receivers.

32. (Currently Amended) A transceiver/transmitter according to claim 31, wherein one of the acknowledgement states is a positive acknowledge and the other acknowledgement state is a negative acknowledge.

33. (Currently Amended) A transceiver/transmitter according to claim 32, wherein upon receiving a negative acknowledge, the transceiver/transmitter retransmits the data to the at least one transceiver receivers.

34-41. (Cancelled)

42. (Currently Amended) A radio communication system including a first transceiver, a second transceiver and a repeater, the first and second transceivers being separated from each other by a distance greater than at least one of their respective maximum transmission ranges, and the repeater being located intermediate the first and second transceivers,

wherein upon receiving data from one of either the first or second transceivers, in a first time slot, the repeater is configured to transmit ~~transmits~~ a repeater flag in a second time slot, and then in a third time slot ~~transmits~~ is configured to transmit the data received in the first time slot, and

the first and second transceivers are configured to transmit a positive acknowledge in a first of three sub-time slots of a fourth time slot, are configured to transmit a negative acknowledge in a second of the three sub-time slots of the fourth time slot, and are configured to transmit a collision indication in a third of the three sub-time slots of the fourth time slot.

43-44. (Cancelled)

45. (Currently Amended) A radio communication system according to claim [[44]] 42, wherein in a fifth time slot, the repeater transmits to all transceivers an overall status for the repeated transmission.

46. (Currently Amended) A repeater for use in a radio communication system including at least two transceivers, the at least two transceivers being separated from each other by a distance greater than at least one of the respective transmitting ranges of the transceivers, ~~in use~~, the repeater being disposed intermediate the at least two transceivers,

wherein, upon receiving data in a first time slot, the repeater ~~transmits is~~ configured to transmit a repeat flag in a second time slot, ~~transmits and is configured to transmit~~ in a third time slot, the data received in the first time slot,

the at least two transceivers are configured to transmit a positive acknowledge in a first of three sub-time slots of a fourth time slot, and are configured to transmit a negative acknowledge in a second of the three sub-time slot of the fourth time slot, and

the repeater is configured to transmit then transmits, in a fourth time slot, a collision acknowledge in a third of the three sub-time slots of the fourth time slot, if a collision has occurred between two or more transmissions.

47. (Currently Amended) A transceiver for use in a radio communication system including at least one other transceiver and a repeater, the transceiver and the at least one other transceiver being separated from each other by a distance greater than at least one of their respective transmitting ranges, ~~in use~~, the repeater being disposed intermediate the transceiver and the at least one other transceiver,

wherein, upon receiving a repeat flag from the repeater, in the a second time slot, the transceiver suspends further action until the transceiver receives from the repeater, in a third time slot, data that was originally transmitted by the at least one other transceiver in a first time slot, before the second time slot.

48. (Currently Amended) A transceiver according to claim 47, wherein the transceiver transmits an acknowledgement indicating the successful or unsuccessful receipt of the data transmitted in the third time slot, or the occurrence of a collision occurring between two or more transmissions.

49. (Currently Amended) A transceiver according to claim 48, wherein the transceiver transmits a positive acknowledge in a first of three sub-time slots of the fourth time slot, or transmits a negative acknowledge in a second of three sub-time slots of the fourth time slot, or transmits a collision acknowledge in a third of three sub-time slots of the fourth time slot.

50. (Currently Amended) A transceiver according to claim 49, wherein in a fifth time slot, the repeater will transmit to all transceivers an overall status for the repeated transmission.

51. (Original) A radio communication system including at least a first transceiver, a second transceiver and a repeater, the first transceiver and the second transceiver being separated by a distance greater than a maximum transmission range of at least one of the

transceivers, the repeater being disposed intermediate the first and second transceivers, such that upon receipt of a data transmission from the first transceiver, the repeater retransmits the data transmission from the first transceiver,

wherein, upon receipt of a data transmission from the second transceiver before the repeater retransmits the data transmission from the first transceiver, the repeater transmits a data sequence instructing each transceiver to ignore the transmission in progress.

52. (Currently Amended) A radio communication system according to claim 51, wherein respective transmissions of the first and second transceivers are headed by a sequence coded such as to be perceived as a collision by a device receiving the transmissions overlapped in time.

53. (Currently Amended) A radio communication system according to claim 52, wherein the data sequence transmitted by the repeater begins with a sequence coded such as to be perceived as a collision when received by a receiving device.

54. (Currently Amended) A radio communication system according to claim 53, wherein upon receiving the data sequence from the repeater, each receiver will immediately transmit the same sequence coded so as to be perceived as a collision by a receiving device, once only, and then ignore further received information until the end of the transmission.

55. (Currently Amended) A radio communication system according to claim 54, wherein when the end of the transmission is reached, receiving devices will transmit an acknowledgement indicating that a collision was detected or will not transmit any acknowledgement at all.

56. (Currently Amended) A radio communication system according to claim 55, wherein upon a transmitting device finding either an acknowledgement indicating a collision, or finds no acknowledgement at all, the transmitting device will delay for a period before attempting to repeat its original transmission.

57. (Currently Amended) A radio communication system according to claim 56, wherein the delay period is calculated by each transceiver selecting a random number and scaling the random number according to the number of bits in its respective transmission.

58. (Currently Amended) A radio communication system according to claim 57, wherein if subsequent transmission retries still collide, subsequently-calculated delay periods are increased.

59. (Currently Amended) A radio communication system according to claim 58, wherein after a predetermined number of unsuccessful re-tries, the radio communication system ceases further transmission attempts.

60. (Currently Amended) A radio communication system according to claim 59, wherein after ceasing further transmission attempts, the radio communication system alerts an operator to the fact that it has ceased further transmission.